CLAIMS

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- Process for the formation of a coating of metal 1. oxides comprising at least one precious metal from Group VIII of the Periodic Table of the elements, optionally in combination with titanium and/or electrically zirconium, on an conductive substrate; the said process consisting said substrate, applying, to the a solution comprising at least one organometallic compound and in then converting the said organometallic compound(s) to metal oxide(s) by means of a heat treatment; the said process being characterized in that the electrically conductive substrate is made of steel or of iron and in that the sole solution applied to the said substrate is a non-aqueous solution of metal acetylacetonate or of a mixture of metal acetylacetonates dissolved solvent(s) which specifically (plurality of) acetylacetonate, dissolve(s) each metal solvent(s) being chosen from alcohols, ketones, chloromethanes or a mixture of two or more solvents mentioned above.
- 2. Process according to Claim 1, characterized in that the precious metal from Group VIII of the Periodic Table of the elements is ruthenium, rhodium, palladium, osmium, iridium or platinum.
- 3. Process according to Claim 2, characterized in that the precious metal is ruthenium or iridium.
- 4. Process according to Claim 3, characterized in that the precious metal is ruthenium.
- 5. Process according to Claim 1, characterized in that the alcohol is ethanol or isopropanol.

- 6. Process according to Claim 1, characterized in that the ketone is acetone.
- 7. Process according to Claim 1, characterized in that the chloromethane is chloroform.
- 8. Process according to any one of Claims 1 to 7, characterized in that the metal acetylacetonate solution is obtained by dissolution of the said metal acetylacetonate in its specific solvent or in a mixture of solvents comprising the specific solvent.
- 9. Process according to any one of Claims 1 to 7, characterized in that the solution comprising several metal acetylacetonates is obtained:
 - either by dissolution of the said metal acetylacetonates in a mixture of solvents comprising the specific solvents for the said metal acetylacetonates;
 - or by mixing solutions comprising only a single metal acetylacetonate which are obtained by dissolution of the said metal acetylacetonate in a specific solvent or in a mixture of solvents comprising the specific solvent for the said acetylacetonate.
- Process according to any one of Claims 1 to 9, 10. characterized in that, in order to obtain the coating of metal oxide(s), the substrate made of steel or of iron is pretreated, in a first stage, then, in a second stage, the comprising the metal acetylacetonate(s) deposited on the said pretreated substrate and the substrate thus coated is dried and then calcined.

- 11. Process according to Claim 10, characterized in that the drying is carried out at a temperature at most equal to 150°C.
- 12. Process according to Claim 10, characterized in that the substrate coated by the metal acetylacetonate(s) is calcined under air or else under an inert gas enriched with oxygen, at a temperature at least equal to 300°C and preferably at a temperature of between 400°C and 600°C, for a period of time ranging from 10 minutes to 2 hours.
- 13. Process according to Claim 10, characterized in that the second stage is repeated at least once and is preferably repeated between 2 and 6 times.
- 14. Electrically conductive substrate made of steel or of iron carrying a coating of metal oxides which is formed by means of a process according to one of Claims 1 to 13.
- 15. Use of the electrically conductive substrate according to Claim 14 in the production of an activated cathode.
- 16. Use of an activated cathode according to Claim 15, in the electrolysis of aqueous solutions of alkali metal chlorides.
- 17. Use according to Claim 16, characterized in that the aqueous solutions of alkali metal chlorides are aqueous sodium chloride solutions.
- 18. Process for the manufacture of chlorine and alkali metal hydroxide by electrolysis of the corresponding chloride by means of a cathode according to Claim 15.

19. Process for the manufacture of alkali metal chlorates by electrolysis of the corresponding chloride by means of a cathode according to Claim 15.